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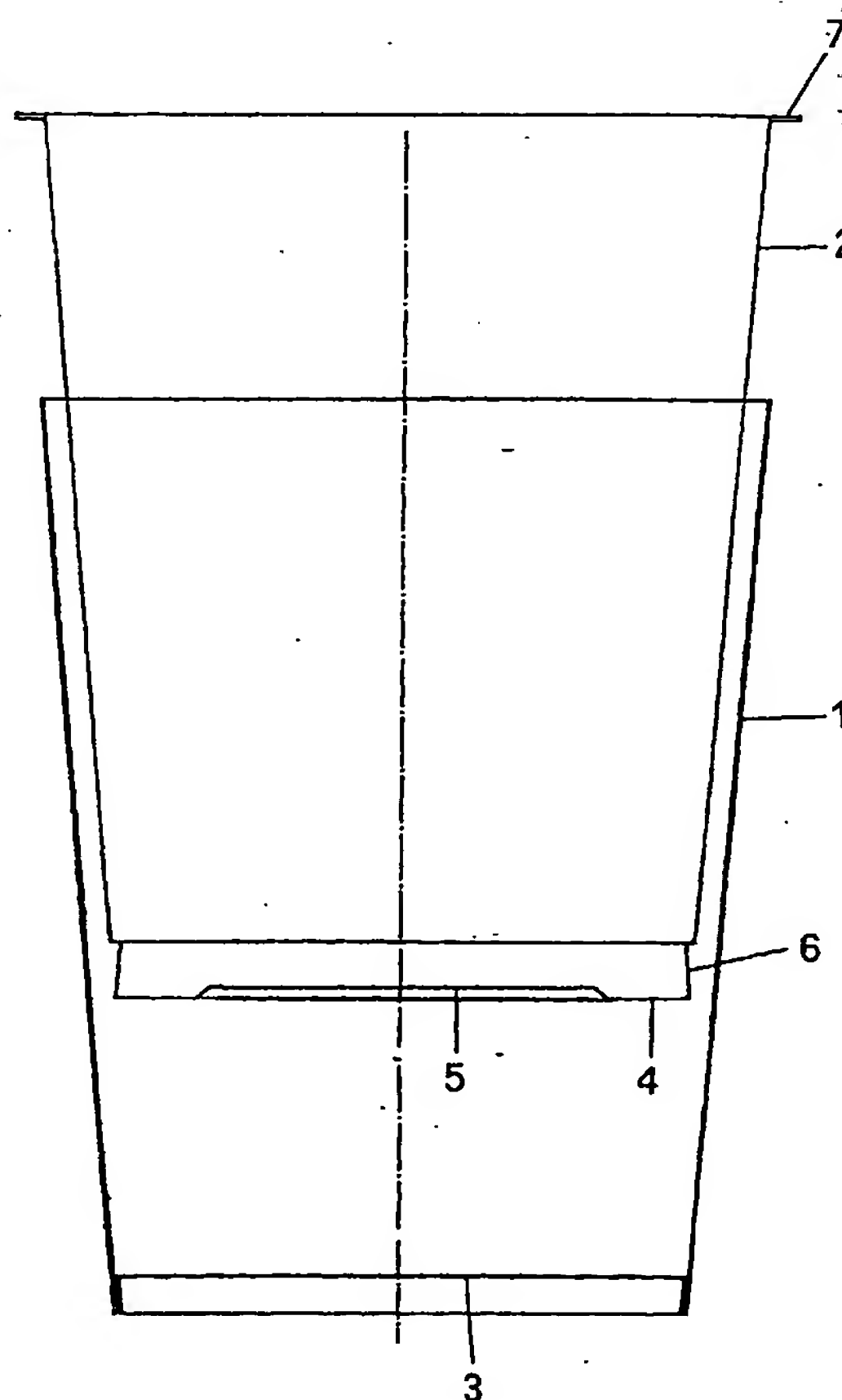
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(54) **Single-use container**

(57) A single use container, intended in particular to contain liquid, semi-liquid, powdered or similar products, comprises a first external hollow body, made of a first material, a second internal hollow body, made of a second material differing from the first one, inserted in said external body and removably joined thereto, in which means are provided for disconnecting said external and internal bodies of the container as to allow their separation after use for recovery and re-cycling of the single raw materials.

*Fig. 1*



## Description

The present invention relates to a single use container for liquid, semi-liquid, powdered or similar products.

Numerous types of single use or disposable containers are known for the long-term conservation of a wide variety of liquid, semi-liquid, powdered or similar products, such as ice-creams, yoghurt, jams, detergents and other products of the mentioned type.

For reasons of economy of cost and ease of processing, said containers are normally made using cardboard materials, coated on the inside with a film of polymer to render them unchangeable when in contact with the contained product, or using plastic materials; both the containers made using the former materials and those made using the latter materials indicated above also have, for the most part, an outer coating, generally glued on, of a sheet of paper material or of a polymer film, to protect them from harmful agents and to enable it to carry inscriptions suitable to define the product they contain, promotional messages, and various representations for giving an improved aesthetic appearance.

A drawback associated with the conventional containers formed as described above derives from the fact that, as it is not possible to separate the material of the real container from the one of the coating, both internal and external, the complex cannot be re-cycled after use, as the component materials are of nature different from one another.

The above is a serious unfavourable aspect of the known containers, in particular in view of the present tendency in many countries towards the issue of strict rules prohibiting the production of objects that are made of materials whose single components are impossible to recover and re-cycle separately.

The object of the present invention is to obviate the above mentioned drawback by providing a container of the type in reference, formed by two hollow bodies, of different materials, inserted one inside the other and fixed in such a way as to be easily separable, so as to distinguish said materials and render the recovery and re-cycling operation of the single constituent raw materials extremely simple.

The present invention will be better in the following by the description of a preferred embodiment thereof, given as a non-limiting example, with reference to the accompanying drawings, in which:

figure 1 is a median longitudinal section view of the container according to the invention, with the two constituent bodies partially inserted one into the other;

figure 2 is a median longitudinal section view of the container of figure 1 in the operating condition; and  
figure 3 is a plan view from below of the bottom of the container of figure 1.

With reference to figure 1, the container according to the invention is shown, formed by a first and a second complementary hollow bodies, of which an external one designated with 1, and an internal one designated with 2, partially inserted one inside the other in said figure, said two hollow bodies 1 and 2 being made of different materials, for example the external one of cardboard and the internal one of plastic.

The hollow bodies 1 and 2, both of an overturned truncated cone shape in the present embodiment example, are provided with respective bottoms 3 and 4, of which that of the internal hollow body 2 has, in a central position, a circular depression 5, and are open at the top.

The internal hollow body 2 has the lower end portion 6 with a taper reversed with respect to the remaining part of the hollow body itself, to prevent the two hollow bodies 1 and 2 from becoming locked together when fully inserted into one another to form the container in reference, said internal hollow body 2 also being provided with a circumferential flange 7 extending outwards from the edge of its top opening.

As can be seen from figure 3, the bottom of the external hollow body 1 has the central part cut in the shape of a concentric circle, so as to form a disk 8 integral with the remaining part in two diametrically opposite points A, B, so that it can be removed easily, the diameter of said disk 8 being approximately equal to the diameter of the circular depression 5 on the bottom of the internal hollow body 2.

To assemble the container according to the invention in its operating condition, as shown in figure 2, the internal hollow body 2 is inserted into the external hollow body 1, after filling the depression 5 on the bottom of the former with a suitable adhesive agent, until the flange 7 on the former rests on the edge of the top opening of the latter, and until the external surface of the bottom 4 of the former fits onto the internal surface of the bottom 3 of the latter, in which position they are temporarily fixed by adhesion of the depression 5 to the disk 8.

With the container in reference thus formed, after the product it contains has been consumed and before discarding the container itself, a slight pressure is exerted on the external surface of the disk 8 on the bottom of the external hollow body 1, which is glued, as described above, to the depression 5 on the bottom of the internal hollow body 2, so as to break the points A and B joining said disk 8 to the remaining part of the bottom of the external hollow body 1 so as to allow the internal hollow body 2 to be expelled from the external hollow body 1, thus obtaining the separation of said hollow bodies and therefore the differentiation of the materials of different nature forming them for easy recovering and re-cycling of the single raw materials.

At this point it should be noted that in an alternative embodiment, the depression 5 on the bottom of the internal body 2 could be eliminated by forming said bottom with a flat surface the central part of which would be spread with adhesive agent for fixing to the disk 8 on the

bottom of the external hollow body 1 during assembly to form the container in reference.

It must also be specified that, although in the above embodiment example the container according to the invention is defined as having the shape of a truncated cone, it is obvious that it can have any other form that foresees a cross-section other than circular, for example square, rectangular, triangular, etc., with the peripheral walls of said external and internal hollow bodies inclined in such a way as to allow insertion of the latter into the former in the manner described above.

The present invention is therefore not limited to the embodiment example described above, but comprises any embodiment variant thereof.

### Claims

1. A single use container comprising:
  - a first external hollow body, provided with a bottom and open at the top, made of a first material;
  - a second internal hollow body, provided with a bottom and open at the top, complementary to said first hollow body and made of a second material differing from the first, capable of being inserted into said first hollow body and removably joined thereto; and
  - means for disconnecting said first and second hollow body when inserted one inside the other and joined one to the other, so as to allow them to be separated for the recovery and re-cycling of the single component materials.
2. A container according to claim 1, in which the material forming said first hollow body is paper, cardboard or the like, and the material forming said second hollow body is plastic or the like.
3. A container according to claim 1 or 2, in which said means for disconnecting said first and second hollow body inserted one inside the other and joined one to the other are formed a part, preferably central, of the bottom of said first hollow body, said part being cut around the perimeter with the exception of at least two points, preferably opposite each other, joining to the remaining part of said bottom, capable of adhering to the corresponding part, previously spread with adhesive agent, of the bottom of said second hollow body, so that by applying pressure on said cut portion on the bottom of said first hollow body, resulting in the breaking of said at least two points of joining to the remaining part of said bottom, said hollow bodies are separated so as to allow the expulsion of said second hollow body from said first hollow body and thus the differentiation of the constituent materials so as to allow recovery and re-cycling of the single raw materials.

*Fig. 1*

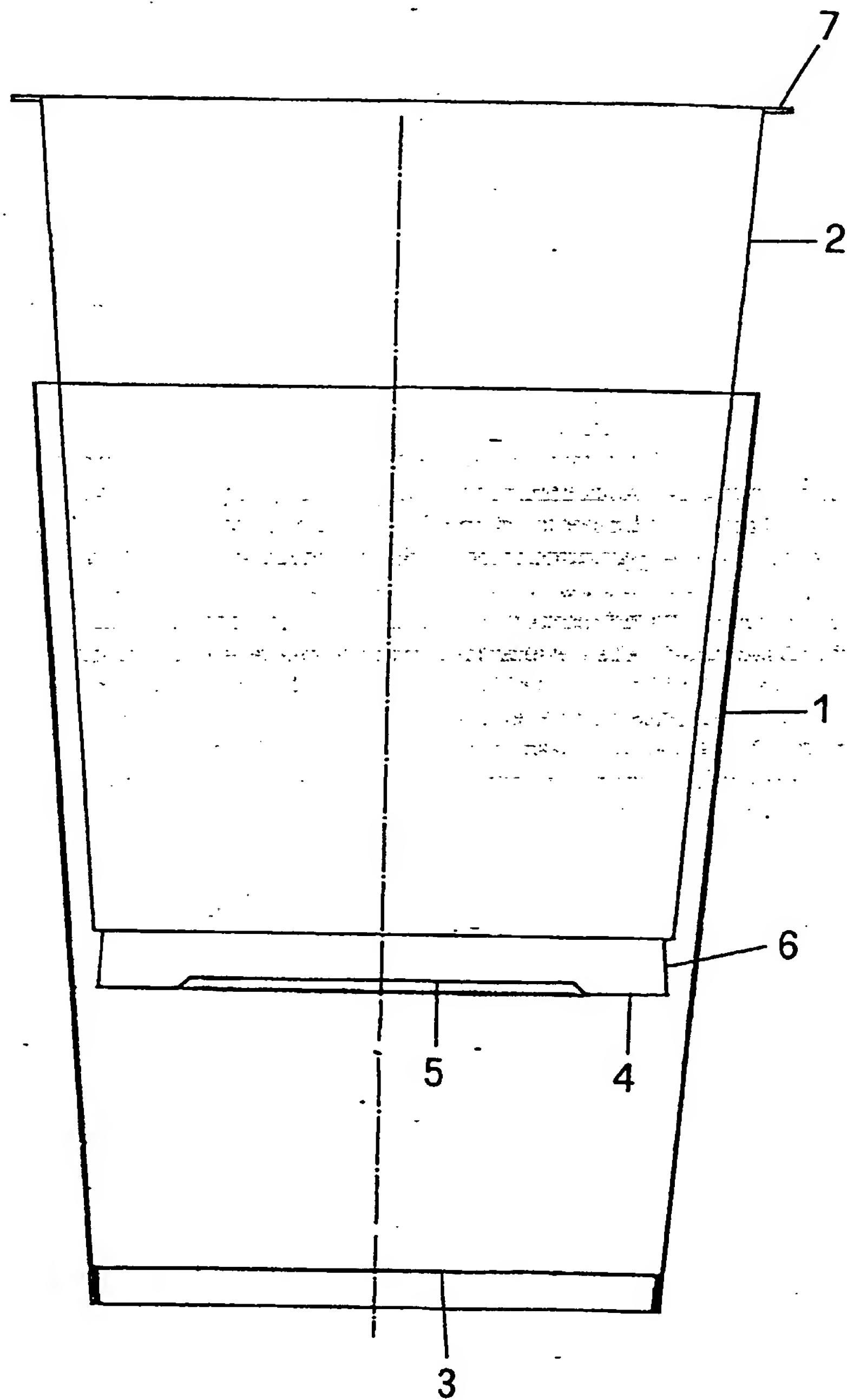


Fig.2

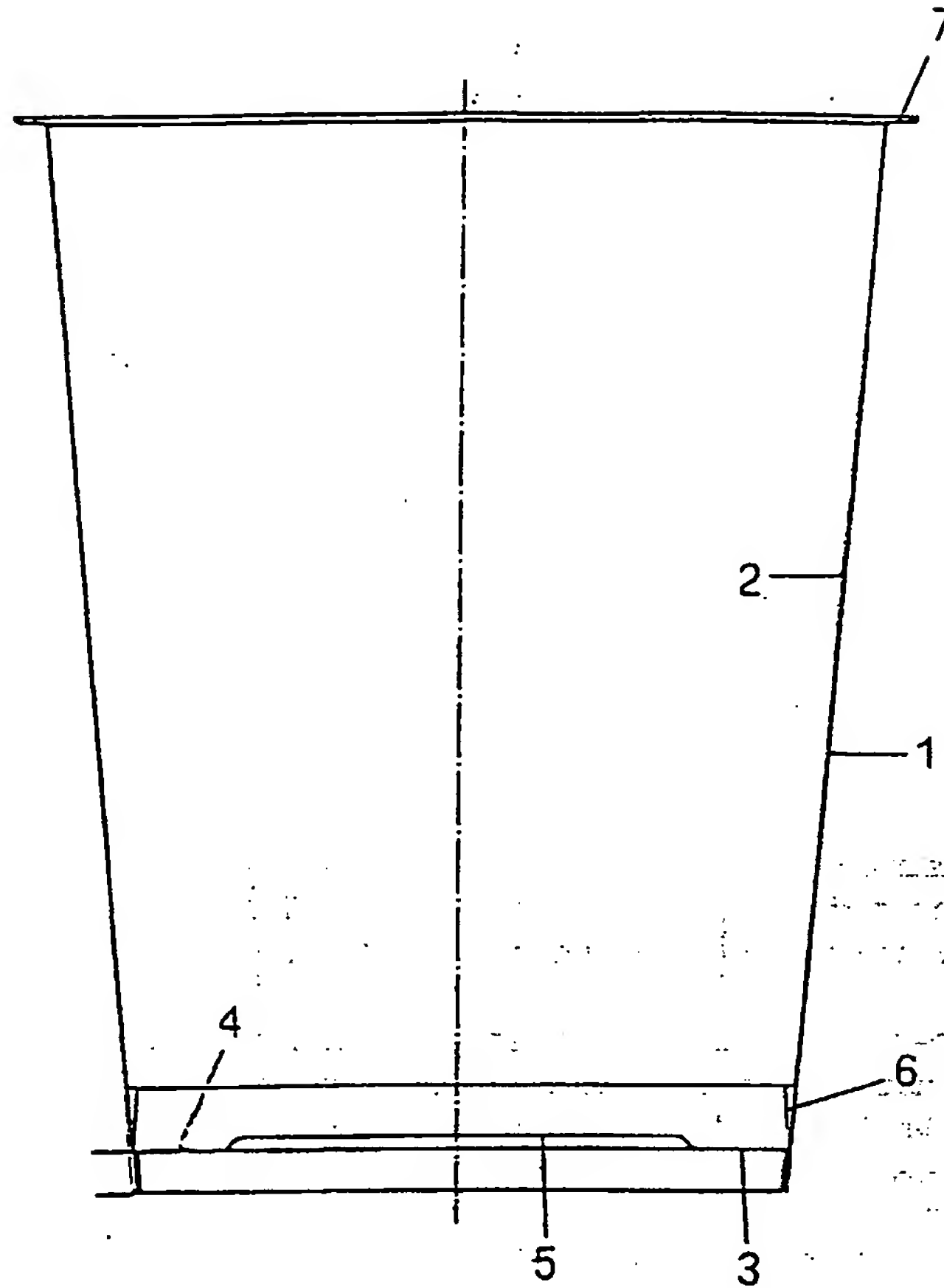


Fig.3

